

Acquisition of Wh-in-situ: The Case of L2 Japanese

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1. Introduction

According to the theory of UG (Universal Grammar), a set of abstract universal principles characterizes the grammars of all possible natural languages. The principles of UG are fully available when children acquire their first language (L1); grammatical principles of UG are modified as infants are exposed to L1 input, and thus all native speakers of a language acquire the same native competence of the language. A number of studies have argued that UG is still available in adult second language (L2) acquisition, even after the critical period (Epstein, Flynn and Martohardjono 1996; Schwartz and Sprouse 1994, 1996; White 1985b, 1989, 2003). These studies demonstrate that L1 and L2 acquisition are more similar than dissimilar. Adult L2 learners (L2ers) utilize language input in order to construct a grammar to understand and produce the target language, as in L1 acquisition. L2 acquisition, like L1 acquisition, has a poverty of the stimulus problem: L2 input is not sufficient enough to cover unconscious knowledge of L2 grammar (White 1985a, 1989, Schwartz and Sprouse, 2000). Furthermore, even though grammar is taught explicitly in language classrooms, certain subtle and complex properties/restrictions of the target language are not taught in classrooms. Thus, it is plausible to assume that L2ers also have access to UG to acquire abstract knowledge of the target language.

This study investigates how L2ers of Japanese with different L1s (English or Korean) acquire a distinction among wh-adjuncts with regard to wh-in-situ in complex NPs. Languages differ in movement operations and levels at which the operation applies (i.e. syntax or Logical Form (LF)). Investigating the acquisition of such properties by speakers of different L1s will help to reveal the status of UG in second language acquisition. Also, testing L2ers of different L1 backgrounds will show us whether the transfer effects of L1 are seen in Interlanguage grammar. L2ers of Japanese do learn about wh-in-situ in classrooms, but they are not explicitly taught which wh-adjuncts can/cannot appear in relative clauses (RCs). If both groups of L2ers can acquire this property, it serves as a piece of evidence that L2ers have access to UG.

2. Syntactic background

2.1 Wh-movement in Japanese and English

This subsection illustrates one of the differences between English and Japanese, namely, the presence or absence of wh-movement in syntax. In Japanese, wh-phrases do not undergo movement and are allowed to appear within complex NPs such as relative clauses (RCs):

- (1) Mary-wa [NP[IP **dare**-ga tsukutta] sushi]-o tabeta no? ¹
-top who -nom made sushi-acc ate Q
Lit. 'Mary eat sushi [that who made]?'

The example in (1) is a wh-question about the person who made the sushi that Mary ate. In English, on the other hand, the same construction is not allowed. This is because wh-phrases undergo obligatory movement in syntax in English, and wh-movement out of an RC is ill-formed:

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¹ The following abbreviations are used in the glosses for the Japanese/Korean data; nom: nominative marker, acc: accusative marker, top: topic marker, C: complementizer, Q: question marker, pst: past tense.

- (2) *Who_i [_{IP} did Mary eat [_{NP} sushi [_{CP} that [_{IP} *t_i* made]]]]?

The above example is ungrammatical because the wh-phrase is extracted from inside a complex NP. This movement violates the Complex NP Constraint.

In the next subsection, details of non-movement of Japanese *wh* are discussed, along with previous studies on wh-movement.

2.2 Previous studies and the analysis of wh-movement

2.2.1 No wh-movement in syntax

In Japanese, as Kuno (1973) has observed, wh-phrases do not have to be preposed to form wh-questions. In other words, wh-phrases stay in-situ, as in the examples below.

- (3) a. Mary-ga hon-ya -de **nani** -o katta no?
 -nom bookstore at what -acc bought Q
 ‘What did Mary buy at a bookstore?’
- b. Mary-ga **doko** -de zasshi -o katta no?
 -nom where at magazine -acc bought Q
 ‘Where did Mary buy a magazine?’

As can be seen by comparing these examples above, in the example (3a), the object argument is replaced by the wh-argument *nani* (‘what’) and in (3b), the place adjunct is replaced by the wh-adjunct *doko* (‘where’). Because of this non-movement property of wh-phrases (wh-in-situ), they can appear in RCs, without violating Island Constraints:

- (4) a. [_{NP}[_{IP} John-ga senshū katta] hon]-ga nakunatta
 -nom last week bought book-nom disappeared
 ‘The book John bought last week disappeared’
- b. [_{NP}[_{IP} John-ga **itsu** katta] hon]-ga nakunatta no?
 -nom when bought book-nom disappeared Q
 Lit. ‘The book [that John bought when] disappeared?’
 ‘For which x, x time, the book [that John bought x] disappeared?’

The example (4a) is a declarative sentence without a wh-phrase. (4b) is a direct wh-question from the RC, where the time adjunct in the RC is replaced by *itsu* (‘when’), and the sentence is grammatical. This is a wh-question asking about the time of buying the book, but not the time of its disappearance. Wh-phrases in Japanese do not undergo movement in syntax, and they are not subject to Subjacency. Thus wh-phrases are allowed to appear within syntactic Islands. Nishigauchi (1990) and Lasnik and Saito (1992) among others have argued that movement takes place at LF for wh-phrases in-situ. Lasnik and Saito argue that wh-movement in languages without syntactic wh-movement should not be constrained by Subjacency at LF, and that this allows sentences such as (4b) to be grammatical in Japanese. Nishigauchi, on the other hand, argues for Subjacency being operative at LF. He argues that wh-phrases move only within the RC, and that the whole complex NP moves to COMP at LF, thus wh-movement at LF obeys Subjacency.

2.2.2 Wh-adjuncts - *why* and *how*

Although wh-phrases are allowed to appear in complex NPs, it is not the case that all wh-phrases can appear in RCs. The following example illustrates that manner/reason wh-adjuncts, unlike other wh-phrases in Japanese, cannot be exempt from Island Constraints.²

- (5) a. *_{[NP_{IP}John-ga **naze** katta] hon]-ga omoshiroi no?}
- nom why bought book-nom interesting Q
- *‘For which x, x a reason, the book [that John bought x] is interesting?’
- b. ?*_{[NP_{CP} John-ga **dooyatte** okutta] kabin] -ga kowareta no?}
- nom how sent vase -nom broke Q
- ?*‘For which x, x manner, the vase [that John sent x] broke?’

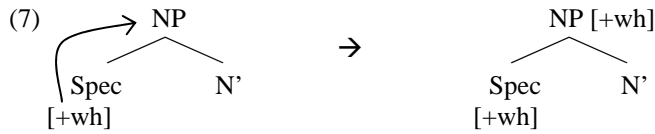
While *when/where* adjuncts can appear in RCs as in (4b), *why* and *how* cannot occur in RCs. The distinction among the wh-adjuncts seems to come from the restriction in LF movement. Huang (1981-82) has pointed out that Chinese wh-words can freely “violate” Subjacency at LF, but that *why* and *how* may not. This is also true in Japanese. Saito (1985) points out that ‘true adjuncts’ (i.e. manner/reason adjuncts, *why* and *how*) in Japanese are more restricted in their properties than other adjuncts. This is because LF movement of the wh-adjuncts, *why* and *how*, out of islands is disallowed for some reason. There are several accounts to explain the ungrammaticality of (5). Lasnik and Saito (1992) argue that wh-adjuncts in Complex NPs are ill-formed because LF movement of wh-adjuncts violates the Empty Category Principle (ECP), that is, the traces of wh-adjuncts after LF movement are not properly governed.

- (6) a. *kimi-wa _{[NP_S naze sono hon -o katta] hito] -o sagashiteiru no?}
- you -top why that book-acc bought person-acc looking for Q
- Lit. ‘Why are you looking for the person [who bought the book *t*]’
- b. LF: *_{[S_S kimi-wa _{[NP_S [S *t*₁ sono hon-o katta] _{[COMP *t*₁’]₁] hito]-o sagashiteiru] _[COMP naze₁]₁]}}}

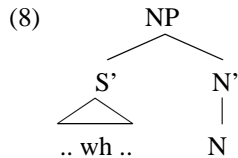
(6b) is the LF representation of (6a). The wh-phrase *naze* ‘why’ moves from COMP to COMP at LF. The initial trace of *naze*, *t*₁, is antecedent-governed by the lowest COMP, thus conforms to the proper government requirement. However, the intermediate trace in the COMP, *t*₁’, is left ungoverned. The only possible binder is the matrix COMP, but it fails to antecedent-govern the intermediate trace because there are two barriers (the NP and the intermediate S’) between them. Lasnik and Saito, however, do not refer to the difference between time/place adjuncts and manner/reason adjuncts. If Lasnik and Saito’s account holds, the time/place wh-adjuncts should also not be allowed in Complex NPs due to the same ECP violation. This is clearly not the case, as we have seen in (4b). Thus, the ECP does not account for the difference between time/place and manner/reason wh-adjuncts. Nishigauchi (1990), on the other hand, argues that *naze* cannot occur in complex NPs because of a restriction on the percolation mechanism in LF. Nishigauchi argues that an RC in Japanese occupies a prenominal position within NP, namely, the RC is a specifier expression. He also argues that the rule of wh-movement is sensitive to a feature such as [+wh]. The feature [+wh] must be associated with an expression of the phrasal level. For example, wh-words like *what*, *who*, etc., are NPs that express the [+wh] feature themselves. The [+wh] feature of a phrase can also be determined by a specifier expression contained in the phrase; if the specifier is [+wh], then the whole phrase can behave as a wh-expression, as in *which man*, *what (kind of) book*, etc.³ Nishigauchi’s idea of a percolation mechanism is that a relevant feature associated with the specifier would climb up to the entire phrase dominating the specifier. Thus, if the [+wh] feature is in the specifier position, the feature percolates to the NP that dominates it:

² Nishigauchi (1990) argues that wh-adjunct *dooyatte* ‘how’ is capable of occurring within a complex NP. However, the native speakers of Japanese that I consulted disfavored *dooyatte* in RCs while allowing ‘where’ and ‘when’ in RCs.

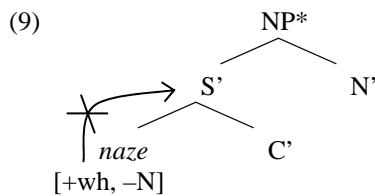
³ This is based on the Condition on Analyzability by May (1977).



A Japanese RC that contains a wh-expression within it is represented as follows:



The percolation mechanism allows the [+wh] feature to climb up to the complex NP that dominates the S' in which the wh-phrase occurs. However, there is a restriction on the mechanism: a wh-phrase has to be identical in syntactic category with the dominating node in order for the [+wh] feature to be percolated. That is, the wh-phrase must also be [+N] to climb up to the complex NP. Wh-arguments such as *nani* 'what' and *dare* 'who' are [+N], and therefore the [+wh] feature can climb up to the Complex NP at LF. On the other hand, wh-adjuncts such as *naze* 'why' are [-N], and the percolation of the wh-phrase is not licensed:



Thus, since the [+wh] feature cannot percolate up to the Complex NP, the resulting LF representation is ill-formed. The question is why it is the case that time/place wh-adjuncts are still able to appear in RCs. Nishigauchi refers to this problem and argues that *doko* 'where' and *itsu* 'when' should be identified as NPs. One of the reasons for this is that time/place wh-phrases can appear as the subject of a sentence, marked by the nominative *ga*, while *naze* 'why' and *dooyatte* 'how' cannot. The example below shows the difference between time/place wh-adjuncts and manner/reason wh-adjuncts in terms of the [\pm N] feature associated with them:

- (10)
- | | | | | | |
|----|---|-------------|---------------|-------------|------------|
| a. | <i>doko</i> / <i>itsu</i> | - <i>ga</i> | <i>ii</i> | <i>desu</i> | <i>ka?</i> |
| | where/when | -nom | good | is | Q |
| | 'Where/When will be good?' | | | | |
| | | | | | |
| b. | * <i>naze</i> / <i>dooyatte</i> - <i>ga</i> | | <i>mondai</i> | <i>desu</i> | <i>ka?</i> |
| | why/how | -nom | problem | is | Q |
| | * 'Why/How will be a problem?' | | | | |

Following the analyses of Nishigauchi (1990) on the restriction of wh-movement at LF, I assume that the wh-feature of manner/reason wh-adjuncts *why* and *how* in Japanese cannot percolate out of the island at LF, thus they cannot appear in complex NPs, unlike the other wh-phrases. In the following subsection, we will see that Korean wh-phrases have the same properties as wh-phrases in Japanese.

2.3 Korean

Korean is a head-final, SOV language. Its syntax is very similar to that of Japanese, including wh-in-situ.

- (11) Mary-nun tosekwan-eyse muess-ul ilk -ess-ni?
 -top library -in what -acc read-pst -Q
 ‘What did Mary read in the library?’

The above example has a wh-phrase that has not moved from its original position, exactly like Japanese. Thus, Korean wh-phrases can also appear in RCs, as seen in (1) in Japanese.

- (12) Mary-nun [[nwu-ka e_i mantu-n] sushi_i]-lul mok-ess-ni?
 -top who-nom make -C sushi -acc eat -pst -Q
 ‘For which x, x a person, Mary ate sushi [that x made]?’

Time/place wh-adjuncts are also allowed within RCs:

- (13) [[John-i eonje e_i sa -n] chaek_i]-i eopseoj -ess-ni?
 -nom when bought -C book -nom disappear-pst-Q
 ‘For which x, x time, the book [that John bought x] disappeared?’

However, just like Japanese, manner/reason wh-adjuncts cannot appear in RCs:

- (14) *[[John-i wei e_i sa -n] chaek_i]-i jaemiss -ni?
 -nom why bought -C book -nom interesting-Q
 ‘For which x, x a reason, the book [that John bought x] is interesting?’

3. Research hypothesis

The hypothesis tested in this study is Full Transfer Full Access (FTFA) Hypothesis (Schwartz and Sprouse 1994, 1996). The FTFA Hypothesis claims that adult L2ers initially transfer their L1 parameter values into their Interlanguage grammar and yet have full access to UG. As such, they are able to acquire abstract grammatical knowledge of the target grammar. Assuming that the non-movement property of wh-phrases is encoded in parameters of UG, FTFA predicts that L2ers of Japanese initially transfer L1 properties on wh-movement, but eventually acquire non-movement of wh-adjuncts even though this phenomenon is not observed in their L1. English is a language that requires movement of wh-phrases in syntax. In Japanese and Korean, wh-phrases stay in-situ and therefore can appear within complex NPs. However, manner/reason wh-adjuncts, *why* and *how*, cannot appear in RCs because their LF movement is restricted. The distinction among wh-adjuncts is not taught in language classrooms. Since Korean and Japanese share the same properties of wh-in-situ, Korean learners should not have a problem acquiring non-movement of wh-phrases or the unavailability of manner/reason wh-adjuncts in RCs in Japanese. English learners of Japanese, on the other hand, have to acquire not only wh-in-situ but also the distinction among wh-adjuncts. If English L2ers of Japanese acquire the distinction between time/place and manner/reason adjuncts, it serves as evidence that L2ers have access to UG. More specifically, Korean and English learners of Japanese are predicted to show different behavior with respect to the distinction between time/place and manner/reason wh-adjuncts due to different initial states (L1 transfer). If, on the other hand, English speakers have acquired the target properties under investigation, both groups of learners will show similar behavior. In order to test this hypothesis, an experiment was conducted with L2ers of Japanese, which is described in the following section.

4. Experiment

4.1 Subjects

Subjects were high-intermediate and advanced learners of Japanese whose first language was either English or Korean. Most of them were university students learning Japanese. Twenty Korean-speaking subjects and 10 English-speaking subjects were tested in Japan. Three English-speaking subjects were tested in Hawaii. In

addition, 20 native speakers of Japanese served as controls. Each L2 subject took a Japanese proficiency test⁴ at the same time as the experiment. The length of time for which subjects had been learning Japanese ranged from 1 year 3 months to 21 years, and the mean was 6.6 years. The length of stay in Japan ranged from 4 months to 15 years, and the mean was 4.6 years.

4.2 Task

The test was a multiple choice judgment task. Subjects were asked to read contexts and test sentences (wh-questions) and choose the most appropriate answers. The contexts were given in their first language (English or Korean) and test sentences and the answers were in Japanese. The test sentences included 6 time/place wh-adjuncts in RCs, 6 time/place wh-adjuncts in matrix clauses, and 6 manner/reason wh-adjuncts in main clauses. Six distracters were also included. The distracters contained wh-arguments whose referents were clear from the verb semantics. The order of the test sentences was randomized.

Following is an example of test sentences for time/place wh-adjuncts in RCs:

- (15) *Context:* Taroo wrote an article last year. It was published in a journal and Hanako read it last week.

Question: Hanako-wa [[Taroo-ga **itsu** kaita] ronbun]-o yonda no?
 -top -nom when wrote article -acc read Q
 Lit. ‘Hanako read the article [that Taroo wrote when]?’

Answer: a) last week (matrix clause)
 b) last year (RC)
 c) Not sure

In the above example, the wh-adjunct, *when*, is in the RC and should be interpreted as modifying the RC predicate. Therefore the correct answer is ‘last year’, when the article was written, but not ‘last week’.

The same contexts (usually with different names) were used the second time to test wh-adjuncts in matrix clauses. Example (16) is the other question for the same context as in (15).

- (16) **itsu** Hanako-wa [[Taroo-ga kaita] ronbun]-o yonda no?
 when -top -nom wrote article -acc read Q
 ‘Hanako read the article [that Taroo wrote] when?’

In (16), the wh-phrase, *itsu* ‘when,’ is outside the RC and preposed before the matrix subject.⁵ It now corresponds to the matrix clause, but not with the RC. In this case, the correct answer (among the same choices given as in the example (15)) is ‘last week’, when *Hanako* read the article, but not ‘last year’.

Finally, the manner/reason wh-adjuncts, *why* and *how*, were tested in a similar way, except that *why* or *how* was placed between the RC and matrix subject so that structurally it caused an ambiguity in terms of where the wh-adjunct corresponded to.

⁴ Test sentences for the proficiency test were taken from the grammar section of the Japanese Language Proficiency Test, Level Two, which was made for advanced learners of Japanese.

⁵ The wh-phrase was preposed in order to avoid ambiguity. If it were placed between the matrix subject and the RC, it could be perceived as though the wh-phrase was preposed inside the RC. In that case, both interpretations would be possible. This option was not pursued in the experiment, because my intention was to test whether L2ers know wh-in-situ in Japanese, not whether they know the interpretive ambiguity by the placement of wh-phrases.

(17) *Context*: Jiroo made a bookshelf by combining wooden boards. Taroo sat on the shelf and broke it.

Question: Taroo-wa **dooyatte** [[Jiroo-ga tsukutta] tana]-o kowashita no?
 -top how -nom made shelf-acc broke Q
 ‘How_i did Taroo break the shelf [that Jiroo made *e_i] $\sqrt{e_i}$?’

Answer: a) by sitting on it ($\sqrt{\text{matrix}}$ clause)
 b) by combining wooden boards (*RC)
 c) Not sure

Since the wh-adjunct, *dooyatte* ‘how,’ is between the matrix subject and the subject in the RC, it is structurally ambiguous as to where this wh-phrase belongs. It is possible that the wh-phrase was fronted within the RC and the wh-question is about the context of the RC. Or, it might also be the case that the wh-phrase is actually in the matrix clause (but not fronted), and therefore it corresponds to the matrix clause. However, manner/reason adjuncts cannot occur in RCs like other wh-adjuncts. The only possible interpretation of the question above is to construe the wh-phrase as identifying the matrix predicate. Thus, the correct answer for this question is (a), which is how *Taroo* broke the shelf, but not how *Jiroo* made the shelf.

5. Results

5.1 When/where adjuncts in matrix clauses

Let us first look at the results of time/place wh-adjuncts that appeared in matrix clauses. When a wh-phrase is outside the RC, it should be interpreted as modifying the matrix predicate. Table 1 shows the number of responses and percentage for each group.

Table 1: Number of responses and percentage to where/when matrix questions (e.g. Example (16))

Group	English	Korean	Japanese
N	13	20	20
Matrix (%)	74 (94.9)	120 (100)	117 (98.3)
*RC (%)	4 (5.4)	0 (0)	2 (0.7)

All three language groups responded correctly, choosing matrix answers for the questions more than 90% of the time. A one-way ANOVA did not show a significant difference for correct responses between groups, $F_{2,50}=2.58$ ($p=.086$).

5.2 When/where adjuncts in RCs

Time/place wh-adjuncts *itsu* and *doko* can also appear in RCs as embedded questions. Table 2 shows the responses to time/place wh-adjuncts that appeared in RCs.

Table 2: Number of responses and percentage to where/when RC questions (e.g. Example (15))

Group	English	Korean	Japanese
*Matrix (%)	48 (63.2)	13 (11.1)	13 (10.9)
RC (%)	28 (36.8)	104 (88.9)	106 (89.1)

Korean and Japanese groups behaved very similarly, correctly choosing RC responses more than 80% of the time. However, English subjects showed different results: they correctly chose RC responses for RC wh-questions less than 40% of the time. A one-way ANOVA showed a significant difference for the correct, RC responses, $F_{2,50}=21.98$ ($p<.001$). Post-hoc tests, multiple comparisons by Tukey HSD, showed that the significant difference lied between the English group and the other two language groups.

5.3 Why/how adjuncts

The manner/reason wh-adjuncts *naze* and *dooyatte* were placed between the matrix subject and the embedded subject in the test sentences so that it involved structural ambiguity. Manner/reason wh-phrases, however, cannot appear in complex NPs, because of the restricted LF movement. Thus, only matrix answers should be chosen, but not the RC answers. Table 3 shows the number of responses and percentage for each group.

Table 3: Number of responses and percentage to why/how questions (e.g. Example (17))

Group	English	Korean	Japanese
Matrix (%)	70 (89.7)	119 (100)	118 (97.5)
*RC (%)	8 (10.3)	0 (0)	3 (2.5)

All three language groups predominantly chose the correct, matrix responses. However, a one-way ANOVA showed a significant difference for matrix responses, $F_{2,50}=4.24$ ($p=.02$). Post-hoc tests, multiple comparisons by Tukey HSD, revealed that a significant difference exists between the English group and the Korean group, but not between the native control group and the L2 groups.

The English group always chose RC responses less frequently than matrix responses even when an RC interpretation was the correct choice. In order to see whether L2ers distinguished between time/place and manner/reason wh-adjuncts, RC responses to *when/where* (Table 2) and *why/how* (Table 3) for each L2 group were compared. Both L2 groups showed a significant difference between the frequency of RC responses on *when/where* questions and *why/how* questions in a paired samples *t*-test (Korean group: $t_{19}=20.193$, ($p<.001$); and English group: $t_{12}=2.497$, ($p=.028$)).

6. Discussion

Generally, L2ers were able to detect the unavailability of the RC interpretation of *why/how* adjuncts, that is, they may be aware of the fact that manner/reason wh-adjuncts are not allowed in Japanese complex NPs. Both groups of L2ers behaved very similarly to Japanese native speakers on this point. However, a significant difference was observed between groups in the responses for *when/where* adjuncts that appeared in RCs, namely, English speakers did not always choose the RC interpretation for wh-phrases in RCs though the control group and the Korean group chose RC responses about 90% of the time.

One could argue that this is evidence of L1 transfer effects: English subjects chose the matrix interpretation whenever a wh-phrase was present in questions, irrespective of the type of wh-phrases (time/place or manner/reason) used, since their L1 does not allow wh-phrases in complex NPs. In fact, three out of 13 English subjects always chose matrix responses irrespective of the placement or the type of wh-phrases.⁶ If this is true for all responses, then English subjects should always choose matrix responses for RC wh-questions such as (15). However this was not the case. English subjects chose at least 36% of RC responses for RC wh-questions. On the other hand, L2ers do learn about the possible wh-phrases in Japanese complex NPs in language classrooms. However, classroom instruction on this particular property does not seem to have affected the responses of the English subjects, given the erroneous responses to RC wh-questions.

Another possible explanation for this is that English subjects might have interpreted questions like (15) as sentences with scrambling. In Japanese, phrases can be moved out of CP by scrambling, and long-distance scrambling is also possible (Saito 1985). According to Saito, scrambling involves adjunction to S, that is, scrambled phrases move rightward, not the other way around. He also argues that long distance scrambling is possible out of complex NPs, especially when the scrambled phrase is an NP. The following example is cited in Saito from Miyara (1982):

⁶ Two of these three English subjects were advanced learners of Japanese, who had lived in Japan for more than 4 years.

- (18) Bill-ga John-wa [___ gakkoo-de Mary-ni kiusita koto]-o Jane-ni osieta
 ↑ -nom -top school-at -to kissed fact -acc -to told
 ‘John told Jane that Bill had kissed Mary at school’

Given the grammatical example above, English subjects might have comprehended the question in (8) as follows:

- (19) Hanako-wa Taroo-ga t_j itsu [[t_i kaita] ronbun]-o yonda no?
 ↑ -top ↑ -nom when wrote article -acc read Q
 ‘When_i did Hanako read the article [that Taroo wrote] e_i ?’

The matrix and the embedded subjects are both preposed, thus the *wh*-phrase *itsu* stays outside the RC, yielding the matrix *wh*-question. This is not an impossible interpretation, since even native controls as well as Korean subjects chose matrix responses for RC *wh*-questions more than 10% of the time. That is, in those cases, Japanese and Korean subjects must have preposed the subject to get the matrix interpretation as above. However, English subjects seemed to prefer this strategy rather than accepting *wh*-phrases inside RCs. For future research, it is worth investigating why English subjects take the scrambling strategy to avoid an RC interpretation, or how L2ers acquire long-distance scrambling.

Given the fact that L2ers did not choose RC responses for manner/reason *wh*-adjuncts, the L2ers seemed to show differentiation between time/place and manner/reason *wh*-adjuncts. For both L2 groups, the difference in the choice of RC responses on *when/where* and *why/how* adjuncts was found to be significant. This suggests that L2ers know the difference between the two types of *wh*-adjuncts with respect to their appearance within RCs. However, as I have mentioned in Footnote 5, test sentences did not have *when/where* adjuncts in the same position as *why/how* adjuncts. The difference in response patterns might have reflected this fact. In order to make a strong claim on this matter, one has to employ test sentences with the two types of *wh*-adjuncts in the same position.

7. Conclusion

This study investigated the L2 acquisition of non-movement of Japanese *wh*-phrases and of the differentiation of *wh*-adjuncts. While the Korean group behaved very similarly to Japanese native controls, the English group’s behavior was different from that of other groups’, suggesting L1 transfer. Still, both groups of L2ers showed differentiation between time/place and manner/reason *wh*-adjuncts in terms of *wh*-in-situ inside RCs. The results suggest that L2ers are able to acquire the contrast between the two types of *wh*-adjuncts as to whether or not they are allowed in Complex NPs, supporting FTFA. Further research is required to investigate the status of UG and possible L1 transfer on the acquisition of *wh*-in-situ.

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